2. *On the Digestion of Proteids by the Pancreas.*—Dr. WM. KUHNE has investigated this subject experimentally, and has been led by his experiments to the following important conclusions:—

1. Alkaline pancreatic infusion (the pancreas being removed from an animal during digestion) will not only digest proteids but will digest them at a rate and to an extent compared with which gastric digestion seems a slow and feeble process. It takes the collected ferment of the whole stomach days to digest half the amount of fibrin which the pancreas will digest in as many hours.

2. The pepton produced by the action of the pancreas, the pancreas pepton, differs in no essential respects from gastric pepton. Its neutral solution (and it is exceedingly soluble in water) is highly diffusible, is not coagulated by heat, and gives the ordinary proteid reactions. It differs chiefly from gastric pepton in the precipitate with acetate of lead not being redissolved in an excess of the reagent, as is the case with the latter; but even this mark appears uncertain. It certainly agrees exactly neither with the *a*, *b*, nor *c* pepton of Meissner; but pepton prepared by Kühne from fibrin by means of pig's stomach exhibited the same want of agreement.

3. Perhaps the most striking fact in the experiment is the enormous production of tyrosin and leucin.[1] Kühne even goes so far as to recommend pancreatic digestion as the most convenient method of preparing tyrosin. We seem to see here the reason why tyrosin and leucin are so often found in the pancreas and sometimes in pancreatic juice; they arise from self-digestion. Thus a pancreas of a dog weighing 47 grms., minced and boiled immediately after removal from the body, gave a decoction containing a trace of pepton, not even an indication of tyrosin and only minute quantities of leucin. Another pancreas of 53 grms. minced, and left to itself for 3 hours in 1 litre of water gave abundance of pepton, much tyrosin, and still more leucin. That, however, in the experiment of fibrin digestion neither leucin nor tyrosin came from the pancreas alone is shown by the fact that the tyrosin obtained weighed nearly as much, and the leucin more than twice as much as the dry weight of the pancreas used.

According to these experiments, therefore, digestion (at least pancreatic digestion) is not a mere conversion of proteids into diffusible modifications, but a process of actual destructive decomposition. We learn from Thiry's analysis that pepton has about the same elementary composition as undigested proteid; and hence it is extremely unlikely that the change taking place in digestion consists in the splitting up of fibrin, for example, into pepton on the one hand, and into leucin, tyrosin, &c., on the other. A much more probable idea is the one that pepton is a stage of decomposition; that the whole of the proteid undergoing digestion is changed first of all into pepton, which is afterwards split up into various non-proteid bodies.

These experiments of Kühne place digestion in a somewhat different light from the one which is at this moment predominant, and are exceedingly suggestive in many ways. The loss of nutritive material through the generation of what are generally regarded as products of regressive metamorphosis indicates the possibility of a *luxus* consumption of nitrogenous food, very different from the luxus consumption of Bidder and Schmidt. At the same time if, as is possible, the greater part of the pepton escapes into the blood by diffusion almost as soon as it is formed, and before it has had time to undergo any further changes, giving rise to leucin, &c., it is evident that natural digestion in the live alimentary canal must, after all, lead to results very different from those which follow upon artificial digestion taking place in the glass vessels of the laboratory. —*Journ. Anat. and Phys.*, Nov. 1867, from *Virchow's Archiv.*, xxxix. 130.

3. *Digestion of Albumen by Pancreatic Juice.*—The researches of Herr KUHNE, recently reported to the Berlin Academy, prove that the secretion of the pancreas has the power of digesting albuminous substances. Herr Kühne produced artificial fistula in twelve dogs, and found that the viscid pancreatic juice extracted by the fistula dissolved large quantities of boiled white of egg

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[1] This seems to have been previously observed by Skrebitzki. See Fudakowski, *Med. Centralblatt*, 1867, p. 547.

in from one and a half to three hours, and at a temperature of about 40° Centigrade. The albumen was converted into peptone, which is not coagulable, and which has the power of ready diffusion through animal membrane. This transformation takes place, according to Kühne, without the intervention of low organisms, and without the production of odour. His experiments on the digestive action of pancreatic juice artificially prepared led Kühne to much the same results. The solution was prepared by macerating the gland in water, and filtering. The artificial juice converts fibrin first into a soluble body, which eventually becomes peptone; this, in its turn, gives rise to leucine, tyrosine, and an extractive matter. If the pancreatic fermentation be continued, basic bodies and fatty acids make their appearance. That these processes take place also in the living animal is proved, says Herr Kühne, by the odour of naphthylamine from the excreta, and by the production of volatile fatty acids in the large intestine.—*Med. Times and Gaz.*, Nov. 2, 1867.

4. *Nutrition.*—Dr. Lionel Beale believes that the serum of the blood is the nutritive pabulum of the body; that the red corpuscles are concerned in its distribution and in preventing changes in the composition of the great mass of the blood as certain constituents are removed from or poured into it; that the white corpuscles are masses of germinal matter concerned in the formation of the serum as well as of the red corpuscles; and that the special products of nutrition depend not so much on the characters of the pabulum as upon the *converting* powers of the germinal matter throughout the textures and which *appropriates* from the pabulum the materials it requires. The red corpuscles have therefore assigned to them a secondary position as agents of nutrition. The principal argument in support of this is derived from the fact that elaborate tissues are formed in animals which have no coloured blood corpuscles. According to Beale three distinct phenomena are involved in nutrition. 1. The contact of the soluble pabulum with the germinal matter of the tissues. 2. The separation of the elements of the pabulum from their state of combination. 3. The rearrangement of these elements and the conversion of some of them into new germinal matter.—*Journ. Anat. and Phys.*, Nov. 1867, from *Quarterly Jl. of Miscroscop. Sc.*, July, 1867.

5. *Respiratory Functions.*—Pettenkoffer and Voit (*Annalen der Chemie und Pharmacie*, cxli. Heft 3) have undertaken a series of researches in their large respiration apparatus at Münich, with a view to determining to what extent the respiratory functions vary during the day and during the night. Their first experiments were conducted upon a young watchmaker, aged 28 years, and led to a remarkable result, in respect to the difference in the amount of oxygen absorbed and carbonic acid evolved during the day and night periods. The experiments included one day of rest, during which the man amused himself by reading and repairing a small clock, and a day of labour in which he was made to turn a wheel heavily charged. The chief conclusions which may be drawn from these experiments are the following: 1st, That in 24 hours the volume of the $CO_2$ eliminated is about equal to that of the O absorbed; 2d, That the interchanges of gas effected by respiration go on differently by day and by night, so that the greater part of the O absorption takes place by night and the greater part of the $CO_2$ elimination by day. Work has scarcely any immediate influence on the oxygen absorbed during the day, although it has a great immediate influence in the amount of $CO_2$ eliminated. This seems to be formed at the expense of oxygen which has been stored up. 3d. The excretion of urea is not increased by work, although this be long sustained. 4th. The elimination of water is very much increased by work, and the increase continues during the ensuing hours of sleep. Pettenkoffer and Voit have, we believe, since repeated these experiments on the man who was the subject of the above experiments, but without confirming the results as to the difference between the day and night periods.—*Journ. Anat. and Phys.*, Nov. 1857, from *Centralblatt*, No. 31.

6. *Influence of Heat on Muscular Contraction.*—A valuable paper has been laid before the French Academy by M. Chmoutevitch, in which the author shows that heat has a greater effect on the determination of muscular contrac-